

BEAM TRAWLING BOARD REPORT IS EXHAUSTIVE

Deductions and Recommendations in Full—Committee Takes in Both Sides of Ocean for Evidence and Makes Many Pertinent Assertions and Gives Reasons Therefor—All Contentions Threshed Out at Length—Collaborators Unanimous in the Conclusions Reached.

The Beam, or Otter, Trawling Report in which so much interest has been shown by all those engaged in the fishing industry of New England is one of the most thorough and exhaustive ever issued from the Bureau of Fisheries in recent years. Proofs of the complete report received at the Times office this morning, show the great labor which those upon whom the responsibility for making it have done. Whatever may be the opinion of the interested fishing people of Gloucester or Boston, on either side, as to the final opinion reached by the committee, one thing is evident to any who will read carefully the whole extended report; and that is their deductions and recommendations have been reached only after the most careful and painstaking thought and research. The Times today publishes the remarks of Commissioner of Fisheries Smith and also of the Committee, in submitting the report, also the deductions, conclusions and recommendations of the report in detail.

give an idea of the extensiveness of the report, to publish it entire would necessitate the use of every page of the Times, even though no advertisement were in the issue. Knowing the great interest, however, evinced in all Great New England fishing centers, the Times will publish tomorrow some of the principal arguments upon which the committee based its final findings, together with some very interesting

The Times is thus early enabled to give its readers the first and only extended story of the report, through the kindness of Congressman Gardner, who, realizing the great interest, did not wait for the publication of the report, but hurried the proof sheets to the Times office.

It is to be hoped that the report will be read carefully by all interested and however much one may differ from its

findings that the evidence on which the committee worked will be carefully considered and also that the committee be given credit for a difficult and unthankful task most thoroughly and exhaustively performed.

The Commissioner's Statement.

In transmitting the report and recommendations to the Secretary of Commerce, Commissioner of Fisheries Hugh M. Smith says among other things:

"On September 30, 1912, Mr. A. B. Alexander, assistant in charge of the division of statistics and methods of the fisheries, was ordered to proceed to Boston and other places to determine on methods for prosecuting the inquiry, but it was not until December 28, 1912, that he was given definite authority to proceed with the work. Mr. Alexander had exclusive charge of the field of investigations, with headquarters in Boston, and, with the exception of insignificant intervals, was continuously in the field during the calendar year 1913; and he is responsible for the methods followed and the data collected.

"Under the plan of investigation adopted, men in the employ of the Bureau were placed on a number of the vessels, both otter trawlers and trawl liners, to make personal observations and records of the practices of the fisheries and the character of the catch.

"An effort was made to obtain men capable of understanding and reporting on the matters which came under observation and at the same time as free as possible from prejudice by reason of their vocations and previous associations.

"During June, 1912, the observers made three trips on otter-trawl vessels and recorded the data of 101 hauls of the nets. From January to December, 1913, 61 trips were made and 1,532 hauls were observed on otter trawlers; and from June to December, 1913, 17 trips and 90 sets of trawl lines were observed on schooners.

"The field investigations were brought to a close in December, 1913, and on February 5, 1914, the Commissioner of Fisheries named for the consideration of the data and the preparation of a report a committee of three, of which Mr. A. B. Alexander was chairman and Messrs. H. F. Moore, assistant in charge of scientific inquiry, and W. C. Kendall, scientific assistant, were members.

"The report speaks for itself and no review therefore by me is necessary. I will simply refer to the chapters containing the conclusions and recommendations, and submit them as the official opinion of the bureau. While I was entirely unaware of the results of the inquiries until the completion and signing of the report, I have carefully reviewed the work of the committee, commend their labors, and endorse their findings as justified by the evidence."

Committee Explains How Findings Were Arrived At.

Very interesting is the statement of the committee which prepared the otter trawl report. This statement prefaces the exhaustive report and is addressed to the Commissioner of Fisheries. It says:

"We have been unable to comply with your injunction in regard to the time at which the report was to be rendered for the reason that we speedily found that the data acquired by the field investigations in 1913 were inadequate as a basis for conclusions which would be either just to all interests or commensurate with the importance of the subject. In order to reach any useful conclusions whatever it has been necessary to consider the available facts presented by the history of otter trawling in Great Britain, and we decided that for this purpose it was advisable to go to the original official sources of information rather than to utilize the conclusions arrived at by the various commissions which have investigated the subject, and this has consumed much time, particularly as the inquiry had to be conducted without interference with many other duties.

"In reviewing the earlier conclusions, and results of various investigations of trawling in Great Britain, it must be borne in mind that the conditions of the sea fisheries there have always been and still are very different from those in this country. There trawling has undergone a progressive evolution, here it has just begun in a small way at the modern end of that evolution, both in the development of the engines of that method of fishing and the fishes sought.

"Therefore, the early considerations of the subject of trawling have only a general, if any, application to the question in this country, as the conditions, until recent date, at least, are incomparable and a comparison, to be of much value, must be of synchronous and analogous conditions. What was concluded by the Royal Commission of 1863, or any other commission or select committee, or the fact that 40 years ago or at any time prior to the advent of steam trawling, and particularly the otter trawl, a great scientist or other authority made this or that statement or came to this or that conclusion, affects the present question to the extent only that the statement or conclusion holds good at the present day and that it applies on this side of the Atlantic.

Competition Cause of Complaint.

"Although the present conditions in the fisheries of Great Britain have been reached through changes and progress of many years, and those of

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this country are of recent and comparatively sudden development, the "bones of contention" have apparently been handed along little changed through the various periods in Great Britain; and finally, still little changed have crossed the Atlantic to America. When analyzed, the allegations against trawl fishing seem to have had their origin in that one economic factor that has been an ever-present cause of complaint against each and every innovation in fishery methods and appliances in whatever country—competition.

Therefore, most of the investigations and inquiries, while directly ascribable to localized self-interest, have been brought about by allegations mainly of general economic significance. The economic conditions, at least, changed from period to period, and each investigation had a somewhat different problem, and its conclusions and recommendations were in accordance with the evidence presented by the conditions of the time. Our investigations have the same characteristic, and it is not improbable that if we should be called on to conduct a similar inquiry in the future, we might find the conditions so changed as to require conclusions different from those we have now reached.

"This committee has based its findings of fact and its conclusions, so far as the conditions on the banks visited by American fishermen are concerned, wholly on the mass of material that has been accumulated in the Bureau of Fisheries; and the opinions of persons other than the members of the committee have been vigorously excluded from consideration.

We are pleased to be able to report complete accord in our deductions and unanimity in our recommendations.

A. B. ALEXANDER.

H. F. MOORE.

W. C. KENDALL.

Summary and Conclusions.

1. Otter trawls do not destroy the spawn of the commercially important demersal fishes, all of which have pelagic or floating eggs.

2. Otter trawls do not seriously disturb the bottom over which they are fished nor materially denude it of the organisms which directly and indirectly serve as food for commercial fishes.

3. The investigations conducted by the Bureau of Fisheries indicated that during 1913 trawling interfered but little with line fishing and caused practically no damage to the trawl lines. From the nature of the two fisheries, however, it is believed both cannot be extensively conducted on the same grounds without resultant accidental damage to or interference with the lines, especially in foggy weather.

4. Otter trawls as compared with lines take a much larger proportion of commercial fishes too small to market. From January to May 3 per cent. of the cod and 11 per cent. of the haddock, and from June to December 40 per cent. of the cod and 38 per cent. of the haddock were unmarketably small, while the lines caught practically no such fish. These proportions were fully maintained in the respective classes of vessels fishing at the same season on the same grounds. These young fish are practically all destroyed.

5. Otter trawls as compared with trawl lines market a much larger proportion of small fish and, therefore, they not only destroy more small fish

not utilized, but are biologically more wasteful, by reason of the smaller size of the marketable fish. As, however, a large proportion of these smaller fish would undoubtedly die or be destroyed under natural conditions before reaching the large or medium size, the effects on the total supply of fish are less to a conceivable, but at present indeterminable, degree than the data presented would indicate.

6. Practically the only food fish which the otter trawl has added to the present yield of the fisheries on the banks is the "sole" of which about 600,000 pounds were caught in 1913. This is equal to about three times the quantity of hake, 36 per cent. of the cod and 5 per cent. of the haddock, or about 4 per cent. of the three combined marketed by the trawlers. On the other hand, it is estimated that this is less than one-third of the weight of the immature cod, haddock, and hake destroyed by otter trawls. The trawlers have not added greatly to the food supply by the introduction of fishes not previously taken in quantities by the liners. They may have conferred some benefit on the consumer by catching and marketing larger quantities of the smaller and cheaper fishes of the cod family, provided, of course, that this does not induce the depletion of the ultimate supply. Both trawlers and liners catch considerable quantities of edible species for which they have failed to develop a market.

Has Affected Price Little or None.

7. There is but little evidence to show that the introduction of the otter trawl in the American fisheries has had any material effect in keeping down the price of fish. Since 1898 there has been a gradual, although fluctuating, increase in the price received by the fishermen for all kinds of fish. The haddock has increased proportionately less than the other demersal fishes and since 1908 has kept close to or below the level of that year, and this is probably, to no small extent, due to the large quantities of small and cheaper fish landed by the trawlers. The catch of the American trawlers, however, is too small in proportion to the total production of demersal fisheries to have a material effect on prices, and we have therefore examined the price statistics of England to determine what light they shed on the subject. We find that while, apparently, the otter trawl reduced the cost of production of fish for a number of years after it became paramount in the fishery of that country, it did it to some extent by reducing the standards of size, and that recently there has been a rapid increase in the prices of fish which are now higher than ever. Undoubtedly the general increase in commodity prices has had some effect.

No Evidence Otter Trawlers Are Depleting Banks.

8. We have been unable to discover from the examination of official records, extending from 1891 to 1914, any evidence whatever that the banks frequented by the American otter trawlers are being depleted of their fishes. Since 1905 when the first steam trawler began operations off the New England coast there have been fluctuations in the total yield of the bank fisheries, but they have been no more violent nor significant than in the period before 1905 when lines alone were used. In fact, some of the heaviest yields recorded in the line fishery have been made in years since the otter trawl was introduced and, while the catch of

line fishermen in 1914 on Georges Banks, South Channel, and Nantucket Shoals, where the otter trawlers operate, was less than half of that in the extraordinary year 1905, this was accompanied by a proportionate reduction in the intensity of the fishery as measured by the number of trips to these grounds. The average catches per trip of haddock and of cod, haddock, and hake combined have been considerable higher since 1910 than for any similar period of which we have record. The average catch of cod per trip to these banks has decreased since 1910, but it is higher than for any similar period prior to the introduction of otter trawling. As the liners catch, proportionately, more cod and the trawlers more haddock on these banks, and as quantitatively the liners catch more of each, the statistical facts of the fishery certainly do not indicate that it has yet shown signs of depletion from the use of the otter trawl.

9. We recognize that the conclusions arrived at in the preceding section are necessarily inconclusive for the reason that the otter-trawl fishery in American waters is too recently established and relatively too small to have had a very material effect on the fish supply of the banks frequented. We have therefore examined the accessible data relating to the fishery in England and Scotland, particularly that conducted in the North Sea, where it is most intensive and has been longest established. We have used the data without reference to the opinions others have expressed and have endeavored to arrive at independent conclusions without prejudice from previous investigations of the subject. While the statistical information, particularly that contained in the English reports, is more useful for the purpose than is that pertaining to our own fishery, it is in recent years only that it is given in sufficient detail. Proof respecting the depletion of the fisheries, on the contrary, can not be deduced. The most possible has been the establishment of more or less strong presumptions one way or the other.

10. The cod, haddock, and plaice are the most important and abundant of the demersal fishes of the North Sea, and the three combined comprise about 75 per cent. of the catch. English vessels take between 50 and 60 per cent. of the total of these species landed from the North Sea, and the English trawlers alone take from 45 to 50 per cent. These three fishes are, therefore, the only ones which it is important to consider.

What English Figures Show.

The statistical data of the English fisheries indicate by a decrease in the total catch, in the average catch per unit of effort, and in the proportion of large fish to the total that probably the plaice fishery is being depleted. The first two criteria also point to a decrease in the haddock, and it is believed that the third test fails to do so only because a lowering in the standard of sizes makes the statistics in this particular misleading. The cod does not show indications of overfishing, probably because its different habits make it less vulnerable to the effects of the predominant fishery, steam trawling.

The statistics of Scotland are less satisfactory for our purpose than are those of England, and it is not possible to obtain sufficient separate data for the North Sea. We have therefore considered the fuller information obtainable in respect to the east coast, the

fishery of which is prosecuted mainly in the North Sea. The same three species are discussed, the catch of these by Scotch vessels in the North Sea proper constituting about 50 per cent. of the total yield of the three in that sea. The plaice shows signs of depletion in the heavy decrease in the total yield and of the average catch per vessel and in the proportion of large fish to the smaller sizes. While the haddock has increased in the total catch, the average catch per vessel has fluctuated to an extent which makes any deductions from the data uncertain; and there is a small decrease in the relative proportion of large fish compared with the total. The cod has increased in total catch and in the average catch per vessel, but relatively fewer larger fish were taken in later years.

Considering the English and Scotch fisheries in the North Sea together, there is a strong presumption of overfishing in the case of the plaice; considerable evidence of the same exists in respect to the haddock and practically none concerning the cod. As the steam trawler is overwhelmingly predominant in the fisheries for these species, it must be held responsible for such overfishing as may have occurred.

11. Three regions other than the North Sea support more or less important English trawl fisheries yielding essentially the same species which have been discussed. They are Iceland, the White Sea, and the Faroe Islands. Separate data concerning them are available for years subsequent to 1905, and while the period covered is too short to admit of deductions of much value, it has been employed for purposes of comparison with the North Sea.

In Iceland the total catch of haddock and plaice and the average catch of each, especially the haddock, showed heavy decreases, while the plaice increased. In all species, but particularly the plaice, there was a decrease in the proportion of large sizes to the total.

In the White Sea the total catch of all species increased from 1905 to 1910, but this was in part due to an increase in fishery activity. As measured by the quantity caught per trip there was an enormous increase in cod, a heavy increase in haddock, and a heavy increase in plaice. The proportion of large fish was approximately maintained in the cod and plaice but much smaller in later years in the case of the haddock, thus indicating that the increase in the catch of the species was due to the saving of smaller fishes previously discarded or sought.

In the Faroes there was a slight increase in the average catch of cod per trip, owing mainly to an increase in the smaller sizes, and a decrease in the haddock, accompanied by a slight increase in the take of smaller fish. The catch of plaice was negligible in all years.

Comparison of Grounds.

The data from these regions therefore in general confirm those relating to the North Sea, namely, that there is a presumptive decrease in the plaice, a probable decrease in the haddock, and no decrease in the numbers of cod, and no change in the numbers of plaice.

12. The North Sea embraces an area of about 152,000 square miles which is not all equally productive, and part of which is resorted to more or very little by English and

rs. Georges Bank, South Channel and Nantucket Shoals cover about square miles, a considerable but not by fishermen and presumably by fishes in large numbers.

1913 English and Scotch (Aberdeen) trawlers only made 50,590 trips to the North Sea. Assuming the entire area of the sea to have been fished, there was one trip to 3 square miles. In the same year trips to Georges Bank, South Channel, and Nantucket Shoals were by American otter trawlers, therefore had 30 square miles of area to each trip.

An unsatisfactory comparison is that we can give of the relative intensity of the otter-trawl fishery in the North Sea and on the banks fished by the American trawlers. The estimate respecting the North Sea of 3 square miles is in fact and the trawlers of other nations that the British are omitted the estimate of 3 square miles is high. In the case of the American trawlers a considerable unproductive area is also included, and while all areas are taken into account the area of 30 square miles is also too small in neither case can we estimate the error. The most specific information concerns the Dogger Bank, an area of 6216 square miles, which English trawlers made 2196 trips in 1913, or approximately a trip to 3 square miles.

The deductions arrived at by the committee and the recommendations in consequence are here given in the very crux of the report:

Recommendations in Full.

The facts before us show no presumption of any depletion of the fisheries on the banks fished by American otter trawlers, possible that the seeds of damage may appear in the future at the development of a wholly new fishery eventually may result in injury where none now exists. The matter presented for our consideration is the safeguarding of the food supply not only of the existing, but of future generations, and we are therefore concerned with present conditions as well as those which may develop with the immediate interests of the parties to the controversy and the interests of the entire community. The perpetuation of some sort of otter fishery for all time.

Line Trawling Not Dangerous.

There have in the history of our own fisheries sufficient information to lead to the belief that there is but little danger of their depletion by line fishing as at present conducted, but there is no such accumulation of data as to the recently introduced beam trawl; and for an indication of the damage to be expected from it we must resort to the history of the fishery in other places. Otter trawling has been practiced longest and has caused its greatest development in the North Sea, where there appears to be ample evidence that it is being carried on to excess and that the fisheries of certain fishes have suffered in consequence. The problem before us, therefore, is to suggest measures for the prevention of the development of such conditions in the American

The injurious effects of the otter-trawl fishery in the North Sea, are believed to be in part due to the destruction of large numbers of small fish, and it has been proposed by certain European authorities to reduce its destructiveness by increasing the size of the meshes of the net to dimensions which will permit the escape of fishes too small to market. We do not regard this as an effective or feasible proposal for the reasons (1) that the meshes tend to close as the drag on the net increases with its burden, (2) that the accumulation of fishes in the cod end closes the avenues of escape there, and (3) that the fishes in any event would not attempt to pass through in large numbers until the net is being hauled in, when the possibility of escape would be reduced to a minimum. An increase in the size of the mesh in the cod end of the net would probably result in an increase in the number of fish killed, thus not only inducing little mitigation of the destruction of young fishes, but entailing additional labor in fishing the apparatus.

How to Regulate.

There remain three other methods of regulation: The absolute prohibition of the use of the otter trawl or similar apparatus; the restriction of the number of nets or vessels which may be employed; and the restriction of the area on which the apparatus may be used.

The first and most drastic measure would of course be most effective, but in view of the fact that it appears to be the excessive use of the otter trawl which has caused injury to the North Sea we do not regard it as justifiable to prohibit its use on the American banks where it is not yet shown to be injurious. In other words, our present information indicates that it is not fishing with otter trawl but overfishing which is to be guarded against. The fact that it is undoubtedly more destructive than line fishing is not sufficient for its condemnation, for the same objection can be raised with more or less validity to almost any other net fishery, and we do not know to what extent the destruction of young fishes in the open seas in reality injures the fisheries.

The regulation or restriction of the number of vessels or trawls permissible in the fishery we regard as objectionable for the reason that it would establish an actual or virtual monopoly. The regulation could be made effective only by the issuance of a limited number of licenses or permits, and this would involve either some selection or discrimination among the applicants by the issuing authority or an indiscriminate issuance of permits to the earlier applicants and their refusal to those making application after the predetermined number had been granted.

Limit Trawlers to Definite Grounds.

The restriction of the use of the otter trawl to certain definite banks and grounds appear the most reasonable just, and feasible method of regulation which has presented itself to us.

It would have the effect of automatically placing some limitation on the number of vessels engaged in the fishery, for the reason that caution would be imposed on prospective investors by virtue of their knowledge that no other fishing grounds were open to ex-

ploitation if those allotted to them should be exhausted.

It would cause the trawlers, for reasons of self-interest, to exercise care to reduce as far as possible such abuses or economic defects as may be inherent in the method and to eliminate those which are not essential to it. The results of offenses against good fishery practices would be imposed directly on the prime offenders and would be mitigated to those using other methods by their freedom of resort to other areas where the evils would be manifested little or not at all.

Any injury to the fishery which might result from the development of otter trawling under such restriction would be localized. It would manifest itself chiefly on the banks to which the fishery might be restricted and, especially in respect to the haddock, the fish likely to be most severely affected, would extend but little or not at all to the banks from which the otter trawl might be excluded. Therefore neither the whole, nor even the major part of our bank fisheries, could be depleted by any conceivable development of otter trawling under such restraint.

Effects Could Be Watched.

Being thus localized, inherent evils would more certainly manifest themselves, the effects could be more closely observed and more quickly and surely detected, the fishery could be kept under closer and more accurate observation, and it would be possible by comparison with the conditions on the prescribed banks to discriminate in some measure between accidental fluctuations in the abundance of the fishes and those which might be due to overfishing.

We therefore recommend that the taking of fishes, excepting shell-fishes, by means of the otter trawl or beam trawl, or any adaptation or modification of either, or by any other apparatus drawn over the bottom by a vessel in motion, be prohibited on all bottoms in the Atlantic Ocean, outside of territorial jurisdiction, north of the fortieth degree of north latitude, excepting Georges Bank, South Channel and Nantucket Shoals east of the meridian of Sankaty Head on the island of Nantucket.

Flounder Fishing Not Affected.

This will retain to the otter trawlers sufficient ground on which to prosecute their calling, it will not exclude the liners therefrom, and it will reserve to the latter exclusively the banks to which they make over two-thirds of their trips. It gives a large measure of absolute protection to the important line fisheries of New England, and at the same time will permit the development of an otter-trawl fishery for flounders and other bottom fishes from New Jersey southward on bottoms where they are not, and probably can not be, taken in large quantities by any other means. The flounder fishery of Massachusetts being conducted in territorial waters will not be interfered with. The regulation can be readily enforced, because the open areas are well known, well defined, and can be kept under surveillance. Moreover, every line fisherman in the area affected will be a self-constituted fish warden, prompted by every motive of self-interest to bring infractions of the regulation to the attention of the proper authorities.

It must be understood that this recommendation is based on what we believe to be the conditions at this time. Next year or 10 or 20 years hence they may be different, and it will be necessary to closely observe the developments of the future to the end that a situation shall not arise such as has arisen in the North Sea, which will be recognized as requiring correction, but which will present such far-reaching and important economic aspects as to make rectification difficult or impossible.

In conclusion, we emphatically state it to be our opinion that this regulation will prove futile and an unnecessary imposition on American fishermen unless Canada, particularly, and, possibly, Newfoundland and France will take such action as will prevent or restrict the use of the trawl on these banks in the western North Atlantic.

TWO SHORE BOATS LAND FARES HERE

Two shore arrivals yesterday afternoon and one this morning were the only sailing fares since yesterday.

The gill netters had a light day, about 15,000 pounds in all being landed.

Today's Arrivals and Receipts.

The arrivals and receipts in detail are:

Sch. Elva L. Spurling, shore, 5000 lbs. fresh fish.
Sch. Monitor, via Portland, 2000 lbs. salt cod.
Str. Mary F. Ruth, gill netting, 2000 lbs. fresh fish.
Str. Evelyn H., gill netting, 1500 lbs. fresh fish.
Str. Bryda F., gill netting, 200 lbs. fresh fish.
Str. Ethel, gill netting, 2500 lbs. fresh fish.
Str. Sawyer, gill netting, 1500 lbs. fresh fish.
Str. Enterprise, gill netting, 1000 lbs. fresh fish.
Str. Quoddy, gill netting, 1000 lbs. fresh fish.
Sch. Benjamin A. Smith, via Boston.
Sch. Manomet, shore.
Sch. Adeline, shore.
Str. Enterprise, gill netting, 1000 lbs. fresh fish.

Yesterday Afternoon Arrivals.

Sch. Mary-P. Goulart, shore, 5000 lbs. fresh fish.
Sch. Harriett, shore, 4000 lbs. fresh fish.

PETER DUNSKY DRIVING THINGS

Sch. Teazer, Capt. Peter Dunskey, stocked \$4492 and the crew shared \$128.48 on the recent halibut trip. This share is the largest of the winter. Captain Dunskey has stocked this year, since January 1, \$6631 and his crew have shared \$164 each.

SOME OF THE EVIDENCE AND

The Times today presents a full page, giving some of the data on which the Otter Trawl committee based its report, the deductions and recommendations of which were published in yesterday's issue. It will be seen that the scope of investigation covered a wide field. Besides the evidence and data given here, the committee also made an official investigation of the otter trawl fisheries of the North Sea, including the famous Dogger bank, supplementing this with official British government statements and figures. This part forms a large section of the main report.

A THOUGHTFUL CAT.